

# PATENT ABSTRACTS OF JAPAN

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## (54) TILTING/TELESCOPIC STEERING DEVICE FOR VEHICLE

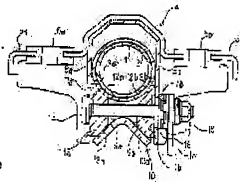
### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a tilting/telescopic steering device based on a lock mechanism using a pair of pieces and slopes without causing the manufacturing cost to steeply rise.

**SOLUTION:** The tilting/telescopic steering device is structured so that the pieces 11a and 11b move inward when a fastening bolt 14 is driven in the axial direction for fastening through an operating lever 15.

The pieces 11a and 11b have slopes 13a and 13b approaching in such a way as crimbing along a pair of slopes 9a and 9b of a guide member 10 having approximately an angle shape, and as a result, move upward toward two columns 1 and 2, which causes a pair of contacting surfaces 12a and 12b to be put in pressure contact with the inner column 1 to generate fastening.

The pieces 11a and 11b thrust between the inner column 1 and the slopes 9a and 9b of the guide member 10 and can not approach any more to each other, and the mating side walls 8a and 8b of a bracket 4 are put in pressure contact with the outer side faces of the pieces 11a and 11b, respectively.



## LEGAL STATUS

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CLAIMS

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[Claim(s)]

[Claim 1] While fitting into an inner column free [ sliding ] in the tilt telescopic steering system for cars which adjusts whenever [ tilt-angle / of a steering column ], and a shaft-orientations location according to an operator's operation position The bracket which has the pair opposite side wall of the outer column in which the slot for telescopic positioning was formed, and the couple which was fixed to the car-body side, arranged so that the fitting section of both [ these ] columns might be enclosed, and formed the slot for tilt adjustment on the couple, The guide member which fixes to an outer column, arranges inside a bracket, and has a slant face, The coma which contacts and arranges in one [ at least ] inside among the pair opposite side walls of the couple of a bracket, and has a movable slant face along the contact surface which can contact an inner column, and the slant face of a guide member through said slot of an outer column, The locking bolt for inserting in the slot for tilt adjustment and coma of a couple, binding the pair opposite side wall of said couple tight, reducing the gap between both-sides walls, or canceling bolting of a both-sides wall, The tilt telescopic steering system for cars characterized by providing a bundle and - discharge means with a bundle to cancel for said locking bolt in the shaft orientations corresponding to the splash of a control lever.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the tilt telescopic steering system for cars which can adjust whenever [ tilt-angle / of a steering column ], and a shaft-orientations location according to an operator's operation position.

[0002]

[Description of the Prior Art] For example, in the telescopic steering system currently indicated to JP,8-8939,Y, it has fitted in free [ sliding of an inner column ] to the outer column, and the lock device canceled with a telescopic bundle with the splash of one control lever is prepared in the fitting section of both columns.

[0003] By this lock device, the locking bolt in which the right male screw and the left male screw were formed is attached in the control lever, the coma of the couple of bilateral symmetry is inserted in this locking bolt, and the right female screw and left female screw which are screwed in the right male screw and left male screw of a locking bolt are formed in the coma of these couples, respectively. Contact of the top face of the coma of these couples is attained through the notch formed in the outer column at the inner column, and the underside of the coma of a couple is movable along the slant face of the couple of an abbreviation Yamagata-like guide member.

[0004] Therefore, if a control lever is rocked to an one direction and a locking bolt is rotated at the time of with a telescopic bundle, the coma of a couple approaches mutually from the relation between a right screw and a left screw. Under the present circumstances, as a result of approaching so that the coma of a couple may go up that underside along the slant face of the couple of an abbreviation Yamagata-like guide member, the coma of these couples moves up, approaching mutually, presses an inner column for that top face up through the notch of an outer column, and carries out the pressure welding of the inner column to an outer column.

[0005] If a control lever is rocked in the other directions and a locking bolt is rotated at the time of telescopic discharge, the coma of a couple will estrange mutually from the relation between a right screw and a left screw. Under the present circumstances, as that underside is gone down along the slant face of the couple of an abbreviation Yamagata-like guide member, as a result of estranging mutually, the coma of a couple cancels the press to the inner column by the coma of a couple, and cancels the pressure welding of an inner column and an outer column.

[0006]

[Problem(s) to be Solved by the Invention] By the way, although there is want of wanting to apply the lock device which used the coma and slant face of the couple currently indicated in the above-mentioned official report also in the tilt telescopic which adjusts whenever [ shaft-orientations location / of a steering column / and tilt-angle ] Only by disclosure of the above-mentioned official report, it has been said that it is not clear how the bracket in which the slot for tilts on the couple was formed should be incorporated, and it cannot necessarily apply the above-mentioned lock device to tilt telescopic easily.

[0007] Moreover, although the coma of a couple has mutually the composition of approaching and estranging from the relation between a right screw and a left screw in the above-mentioned official report, it has been said that it is necessary to form two kinds of screws in a locking bolt and the coma of a couple, and a processing process is complicated and invites the jump of a manufacturing cost.

[0008] This invention aims at offering the steering system for cars which applied the lock device using a coma and a slant face to tilt telescopic, without being made in view of a situation which was mentioned above, and inviting the jump of a manufacturing cost.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned object, the steering system for cars concerning this invention While fitting into an inner column free [ sliding ] in the tilt telescopic steering system for cars which adjusts whenever [ tilt-angle / of a steering column ], and a shaft-orientations location according to an operator's operation position The bracket which has the pair opposite side wall of the outer column in which the slot for telescopic positioning was formed, and the couple which was fixed to the car-body side, arranged so that the fitting section of both [ these ] columns might be enclosed, and formed the slot for tilt adjustment on the couple, The guide member which fixes to an outer column, arranges inside a bracket, and has a slant face, The coma which contacts and arranges in one [ at least ] inside among the pair opposite side walls of the couple of a bracket, and has a movable slant face along the contact surface which can contact an inner column, and the slant face of a guide member through said slot of an outer column, The locking bolt for inserting in the slot for tilt adjustment and coma of a couple, binding the pair opposite side wall of said couple tight, reducing the gap between both-sides walls, or canceling bolting of a both-sides wall, Corresponding to the splash of a control lever, it is characterized by providing a bundle and - discharge means with a bundle to cancel for said locking bolt in the shaft orientations.

[0010] Thus, if according to this invention a control lever is rocked to an one direction at the time of with a tilt telescopic bundle and a locking bolt is bound tight to shaft orientations, a coma will move inside. Under the present circumstances, as a result of approaching so that a coma may go up along the slant face of that guide member, a coma moves up toward both columns, carries out the pressure welding of that contact surface to an inner column through the slot of an outer column, presses an inner column up and carries out the pressure welding of the inner column to an outer column. At this time, a coma is in the condition that it is stubborn between the slant faces of the guide member of one in an inner column and an outer column, and cannot approach mutually more than it, carries out the pressure welding of one [ at least ] pair opposite side wall of a bracket to the side face of a coma, and presses it on it. In this way, an inner column and an outer column are really made relation through a coma to a bracket.

[0011] At the time of tilt telescopic discharge, if a control lever is rocked in the other directions and a locking bolt is canceled, along the slant face of a guide member, as a coma goes down the slant face, it will estrange it, and will cancel a prop between an inner column and the slant face of a guide member. Consequently, while canceling the pressure welding to the inner column by the contact surface and carrying out telescopic discharge, the pressure welding of the side face of a coma and one [ at least ] pair opposite side wall of a tilt bracket is canceled, and tilt discharge is carried out.

[0012] Therefore, the lock device using a coma and a slant face can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to this invention, without using a right screw and a left screw.

[0013]

[Embodiment of the Invention] Hereafter, the tilt telescopic steering system for cars concerning the gestalt of operation of this invention is explained, referring to a drawing.

[0014] Drawing 1 is the side elevation of the tilt telescopic steering system for cars concerning the gestalt of operation of this invention. Drawing 2 is the cross-sectional view of the lock device concerning the gestalt of the 1st operation of tilt telescopic shown in drawing 1. Drawing 3 is the cross-sectional view of the lock device concerning the gestalt of the 2nd operation of tilt telescopic shown in drawing 1. It explains in full detail below.

[0015] As shown in drawing 1, to the inner column 1 by the side of lower one fixed to the car body, it has fitted in free [ sliding ] of the outer column 2 by the side of an upper ], and the tilt and the telescopic lock device are prepared in the fitting section of both [ these ] the columns 1 and 2. In addition, the slot 3 which extends in the steering shaft orientations of the couple for inserting in the coma 11 of a couple mentioned later under the outer column 2 is formed.

[0016] As shown in drawing 2, a bracket 4 fixes to a car body and is provided so that both the columns 1 and 2 may be enclosed from the upper part. The upper part of this bracket 4 -- the method of both sides -- flare appearance -- Shoulders 5a and 5b are attached by welding etc. the bottom, and Shoulders 5a and 5b are equipped with the capsules 6a and 6b for balking at the time of a secondary collision. The bracket 4 has the pair opposite side walls 8a and 8b of the couple in which the slots 7a and 7b for tilt adjustment on the couple were formed. The slots 7a and 7b for tilt adjustment curved so that a steering shaft could rotate a tilt location to adjustment, and they have extended almost up and down.

[0017] The guide member 10 of the shape of abbreviation Yamagata which has the slant faces 9a and 9b of a couple fixes to the outer column 2 by welding etc., and is prepared in the outer column 2 bottom.

[0018] Inside the pair opposite side walls 8a and 8b of the couple of a bracket 4, the coma 11a and 11b of a couple is formed. The coma 11a and 11b of these couples has the slant faces 13a and 13b of a movable couple along the slant faces 9a and 9b of the couple of the guide member 10 while having the contact surfaces 12a and 12b of the couple which can contact the inner column 1 through the slots 3a and 3b of the outer column 2. The coma 11a and 11b of a couple carries out field contact at the pair opposite side walls 8a and 8b, respectively.

[0019] The locking bolt 14 is inserted in the coma 11a and 11b of the slots 7a and 7b for tilt adjustment on the couple, and a couple. The control lever 15 and the cam lock device 16 are established at the head of this locking bolt 14.

[0020] This cam lock device 16 consists of a control lever 15, a 1st cam member 17 rotated in one, and a 2nd cam member 18 of the nonrotation which moves to shaft orientations, and locks or cancels [ lock ], engaging with Yamabe of the 1st cam member 17, or a trough with the revolution of this 1st cam member 17.

[0021] In the tilt telescopic steering system constituted as mentioned above, if a control lever 15 is rocked to an one direction and a locking bolt 14 is bound tight to shaft orientations when deciding and binding a tilt location and a telescopic location tight, the coma 11a and 11b of a couple will move inside.

[0022] Under the present circumstances, the result which approaches so that the coma 11a and 11b of a couple may go up the slant faces 13a and 13b of that couple along the slant faces 9a and 9b of the couple of the abbreviation Yamagata-like guide member 10, The coma 11a and 11b of these couples moves up toward both the columns 1 and 2, approaching mutually. The inner column 1 is contacted through the slots 3a and 3b of the outer column 2 in the contact surfaces 12a and 12b of the couple, the inner column 1 is pressed up, the pressure welding of the inner column 1 is carried out to the outer column 2, and it is bound tight.

[0023] At this time, the coma 11a and 11b of a couple is in the condition that it is stubborn between the inner column 1 and the slant faces 9a and 9b of the guide member 10, and cannot approach mutually more than it, therefore carries out the pressure welding of the pair opposite side walls 8a and 8b of the couple of a bracket 4 to the outside side face of the coma 11a and 11b of a couple, respectively, and presses them on it. In this way, the inner column 1 and the outer column 2 are really held through the coma 11a and 11b of a couple at relation to a bracket 4.

[0024] On the other hand, at the time of tilt telescopic discharge, if a control lever 15 is rocked in the other directions and a locking bolt 14 is canceled, as the coma 11a and 11b of a couple goes down the slant faces 13a and 13b of the couple along the slant faces 9a and 9b of the couple of the abbreviation Yamagata-like guide member 10, they will estrange them mutually, and will cancel a prop between the inner column 1 and the slant faces 9a and 9b of the guide member 10. Consequently, while canceling the pressure welding to the inner column 1 by the contact surfaces 12a and 12b of a couple, the pressure welding of the outside side face of the coma 11a and 11b of a couple and the pair opposite side walls 8a and 8b of the couple of a tilt bracket 4 is canceled.

[0025] Therefore, the lock device 16 using Coma 11a and 11b and the slant faces 9a, 9b, 13a, and 13b of a couple can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to the gestalt of this operation, without using a right screw like before, and a left screw.

[0026] Next, the gestalt of the 2nd operation of this invention is explained with reference to drawing 3. The configuration of the guide member which prepares the gestalt of the 2nd operation in the outer column bottom differs from the gestalt of the 1st operation. In addition, a part for the structured division same about drawing 3 as the gestalt of the 1st operation shown in drawing 2 is explained with the same sign.

[0027] Drawing 3 is the cross-sectional view showing the lock device concerning the gestalt of the 2nd operation of tilt telescopic shown in drawing 1.

[0028] As shown in drawing 3, a bracket 4 fixes to a car body and is provided so that both the columns 1 and 2 may be enclosed from the upper part. the upper part of this bracket 4 -- the method of both sides -- flare appearance -- Shoulders 5a and 5b are attached by welding etc. the bottom, and Shoulders 5a and 5b are equipped with the capsules 6a and 6b for balking at the time of a secondary collision. The bracket 4 has the pair opposite side walls 8a and 8b of the couple in which the slots 7a and 7b for tilt adjustment on the couple were formed. The slots 7a and 7b for tilt adjustment curved so that a steering shaft could rotate a tilt location to adjustment, and they have extended almost up and down.

[0029] The guide member 20 is fixed to the outer column 2 bottom by welding etc. The guide member 20 has a part for a horizontal level 22 and the L type part 23 linked to a slant face 21 and a slant face 21 in one.

[0030] A coma 24 is formed in the slant-face 21 side inside the pair opposite side walls 8a and 8b of the couple of a bracket 4. A coma 24 contacts the slant face 21 of the guide member 20, and has the movable slant face 26 along with it

while it has the contact surface 25 which can contact the inner column 1 through the slot 3 of the outer column 2. A coma 24 carries out field contact at pair opposite side wall 8a.

[0031] The locking bolt 14 is inserted in the slots 7a and 7b for tilt adjustment and coma 24 of a couple. The control lever 15 and the cam lock device 16 are established at the head of this locking bolt 14.

[0032] This cam lock device 16 consists of a control lever 15, a 1st cam member 17 rotated in one, and a 2nd cam member 18 of the nonrotation which moves to shaft orientations, and locks or cancels [ lock ], engaging with Yamabe of the 1st cam member 17, or a trough with the revolution of this 1st cam member 17.

[0033] In the tilt telescopic steering system constituted as mentioned above, if a control lever 15 is rocked to an one direction and a locking bolt 14 is bound tight to shaft orientations when deciding and binding a tilt location and a telescopic location tight, a coma 24 will move inside.

[0034] Under the present circumstances, as a result of a coma's 24 moving so that a slant face 26 may go up along the slant face 21 of the guide member 20, a coma 24 moves up toward both the columns 1 and 2, contacts the inner column 1 through the slot 3 of the outer column 2 in that contact surface 25, presses the inner column 1 up, carries out the pressure welding of the inner column 1 to the outer column 2, and binds it tight.

[0035] At this time, a coma 24 is in the condition that it was stubborn between the inner column 1 and the slant face 21 of the guide member 20, into the L type parts 23 of the outside side face of a coma 24, and the guide member 20, carries out the pressure welding of the pair opposite side walls 8a and 8b of the couple of a bracket 4, respectively, and presses them. In this way, the inner column 1 and the outer column 2 are really held through the L type parts 23 of a coma 24 and the guide member 20 at relation to a bracket 4.

[0036] On the other hand, if a control lever 15 is rocked in the other directions and a locking bolt 14 is canceled, at the time of tilt telescopic discharge, a coma 24 will move so that a slant face 26 may go down along the slant face 21 of the guide member 20, and will cancel a prop between the inner column 1 and the slant face 21 of the guide member 20 at it. Consequently, while canceling the pressure welding to the inner column 1 by the contact surface 25, the pressure welding of the outside side face of a coma 24 and the pair opposite side walls 8a and 8b of the couple of the tilt bracket 4 of the L type part 23 of the guide member 20 is canceled, respectively.

[0037] Therefore, the lock device 16 using a coma 24 and slant faces 21 and 26 can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to the gestalt of this operation, without using a right screw like before, and a left screw.

[0038] In addition, this invention is not limited to the gestalt of operation mentioned above, but is variously deformable.

[0039]

[Effect of the Invention] If a control lever is rocked to an one direction at the time of with a tilt telescopic bundle according to [ as explained above ] this invention and a locking bolt is bound tight to shaft orientations, a coma will move up toward both columns on the slant face of a guide member, the pressure welding of the contact surface is carried out to an inner column through the slot of an outer column, an inner column is pressed up, and the pressure welding of the inner column is carried out to an outer column. At this time, a coma is in the condition that it is stubborn between an inner column and the slant face of a guide member, and cannot approach more than it, and an inner column and an outer column are held through a coma at one to a bracket.

[0040] If a control lever is rocked in the other directions and a locking bolt is canceled, at the time of tilt telescopic discharge, a coma will move so that a slant face may be gone down along a guide member slant face, and will cancel a prop between an inner column and the slant face of a guide member at it. Consequently, while canceling the pressure welding to the inner column by the contact surface, the pressure welding of a coma and a bracket is canceled.

[0041] Therefore, the lock device using a coma and a slant face can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to this invention, without using a right screw and a left screw.

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TECHNICAL FIELD

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[Field of the Invention] This invention relates to the tilt telescopic steering system for cars which can adjust whenever [ tilt-angle / of a steering column ], and a shaft-orientations location according to an operator's operation position.

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PRIOR ART

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[Description of the Prior Art] For example, in the telescopic steering system currently indicated to JP,8-8939,Y, it has fitted in free [ sliding of an inner column ] to the outer column, and the lock device canceled with a telescopic bundle with the splash of one control lever is prepared in the fitting section of both columns.

[0003] By this lock device, the locking bolt in which the right male screw and the left male screw were formed is attached in the control lever, the coma of the couple of bilateral symmetry is inserted in this locking bolt, and the right female screw and left female screw which are screwed in the right male screw and left male screw of a locking bolt are formed in the coma of these couples, respectively. Contact of the top face of the coma of these couples is attained through the notch formed in the outer column at the inner column, and the underside of the coma of a couple is movable along the slant face of the couple of an abbreviation Yamagata-like guide member.

[0004] Therefore, if a control lever is rocked to an one direction and a locking bolt is rotated at the time of with a telescopic bundle, the coma of a couple approaches mutually from the relation between a right screw and a left screw. Under the present circumstances, as a result of approaching so that the coma of a couple may go up that underside along the slant face of the couple of an abbreviation Yamagata-like guide member, the coma of these couples moves up, approaching mutually, presses an inner column for that top face up through the notch of an outer column, and carries out the pressure welding of the inner column to an outer column.

[0005] If a control lever is rocked in the other directions and a locking bolt is rotated at the time of telescopic discharge, the coma of a couple will estrange mutually from the relation between a right screw and a left screw. Under the present circumstances, as that underside is gone down along the slant face of the couple of an abbreviation Yamagata-like guide member, as a result of estranging mutually, the coma of a couple cancels the press to the inner column by the coma of a couple, and cancels the pressure welding of an inner column and an outer column.

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EFFECT OF THE INVENTION

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[Effect of the Invention] If a control lever is rocked to an one direction at the time of with a tilt telescopic bundle according to [ as explained above ] this invention and a locking bolt is bound tight to shaft orientations, a coma will move up toward both columns on the slant face of a guide member, the pressure welding of the contact surface is carried out to an inner column through the slot of an outer column, an inner column is pressed up, and the pressure welding of the inner column is carried out to an outer column. At this time, a coma is in the condition that it is stubborn between an inner column and the slant face of a guide member, and cannot approach more than it, and an inner column and an outer column are held through a coma at one to a bracket.

[0040] If a control lever is rocked in the other directions and a locking bolt is canceled, at the time of tilt telescopic discharge, a coma will move so that a slant face may be gone down along a guide member slant face, and will cancel a prop between an inner column and the slant face of a guide member at it. Consequently, while canceling the pressure welding to the inner column by the contact surface, the pressure welding of a coma and a bracket is canceled.

[0041] Therefore, the lock device using a coma and a slant face can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to this invention, without using a right screw and a left screw.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] By the way, although there is want of wanting to apply the lock device which used the coma and slant face of the couple currently indicated in the above-mentioned official report also in the tilt telescopic which adjusts whenever [ shaft-orientations location / of a steering column / and tilt-angle ] Only by disclosure of the above-mentioned official report, it has been said that it is not clear how the bracket in which the slot for tilts on the couple was formed should be incorporated, and it cannot necessarily apply the above-mentioned lock device to tilt telescopic easily.

[0007] Moreover, although the coma of a couple has mutually the composition of approaching and estranging from the relation between a right screw and a left screw in the above-mentioned official report, it has been said that it is necessary to form two kinds of screws in a locking bolt and the coma of a couple, and a processing process is complicated and invites the jump of a manufacturing cost.

[0008] This invention aims at offering the steering system for cars which applied the lock device using a coma and a slant face to tilt telescopic, without being made in view of a situation which was mentioned above, and inviting the jump of a manufacturing cost.

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MEANS

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[Means for Solving the Problem] In order to attain the above-mentioned object, the steering system for cars concerning this invention While fitting into an inner column free [ sliding ] in the tilt telescopic steering system for cars which adjusts whenever [ tilt-angle / of a steering column ], and a shaft-orientations location according to an operator's operation position The bracket which has the pair opposite side wall of the outer column in which the slot for telescopic positioning was formed, and the couple which was fixed to the car-body side, arranged so that the fitting section of both [ these ] columns might be enclosed, and formed the slot for tilt adjustment on the couple, The guide member which fixes to an outer column, arranges inside a bracket, and has a slant face, The coma which contacts and arranges in one [ at least ] inside among the pair opposite side walls of the couple of a bracket, and has a movable slant face along the contact surface which can contact an inner column, and the slant face of a guide member through said slot of an outer column, The locking bolt for inserting in the slot for tilt adjustment and coma of a couple, binding the pair opposite side wall of said couple tight, reducing the gap between both-sides walls, or canceling bolting of a both-sides wall, Corresponding to the splash of a control lever, it is characterized by providing a bundle and - discharge means with a bundle to cancel for said locking bolt in the shaft orientations.

[0010] Thus, if according to this invention a control lever is rocked to an one direction at the time of with a tilt telescopic bundle and a locking bolt is bound tight to shaft orientations, a coma will move inside. Under the present circumstances, as a result of approaching so that a coma may go up along the slant face of that guide member, a coma moves up toward both columns, carries out the pressure welding of that contact surface to an inner column through the slot of an outer column, presses an inner column up and carries out the pressure welding of the inner column to an outer column. At this time, a coma is in the condition that it is stubborn between the slant faces of the guide member of one in an inner column and an outer column, and cannot approach mutually more than it, carries out the pressure welding of one [ at least ] pair opposite side wall of a bracket to the side face of a coma, and presses it on it. In this way, an inner column and an outer column are really made relation through a coma to a bracket.

[0011] At the time of tilt telescopic discharge, if a control lever is rocked in the other directions and a locking bolt is canceled, along the slant face of a guide member, as a coma goes down the slant face, it will estrange it, and will cancel a prop between an inner column and the slant face of a guide member. Consequently, while canceling the pressure welding to the inner column by the contact surface and carrying out telescopic discharge, the pressure welding of the side face of a coma and one [ at least ] pair opposite side wall of a tilt bracket is canceled, and tilt discharge is carried out.

[0012] Therefore, the lock device using a coma and a slant face can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to this invention, without using a right screw and a left screw.

[0013]

[Embodiment of the Invention] Hereafter, the tilt telescopic steering system for cars concerning the gestalt of operation of this invention is explained, referring to a drawing.

[0014] Drawing 1 is the side elevation of the tilt telescopic steering system for cars concerning the gestalt of operation of this invention. Drawing 2 is the cross-sectional view of the lock device concerning the gestalt of the 1st operation of tilt telescopic shown in drawing 1 . Drawing 3 is the cross-sectional view of the lock device concerning the gestalt of the 2nd operation of tilt telescopic shown in drawing 1 . It explains in full detail below.

[0015] As shown in drawing 1 , to the inner column 1 by the side of lower one fixed to the car body, it has fitted in free [ sliding of the outer column 2 by the side of an upper ], and the tilt and the telescopic lock device are prepared in the

fitting section of both [ these ] the columns 1 and 2. In addition, the slot 3 which extends in the steering shaft orientations of the couple for inserting in the coma 11 of a couple mentioned later under the outer column 2 is formed.

[0016] As shown in drawing 2, a bracket 4 fixes to a car body and is provided so that both the columns 1 and 2 may be enclosed from the upper part. the upper part of this bracket 4 -- the method of both sides -- flare appearance -- Shoulders 5a and 5b are attached by welding etc. the bottom, and Shoulders 5a and 5b are equipped with the capsules 6a and 6b for balking at the time of a secondary collision. The bracket 4 has the pair opposite side walls 8a and 8b of the couple in which the slots 7a and 7b for tilt adjustment on the couple were formed. The slots 7a and 7b for tilt adjustment curved so that a steering shaft could rotate a tilt location to adjustment, and they have extended almost up and down.

[0017] The guide member 10 of the shape of abbreviation Yamagata which has the slant faces 9a and 9b of a couple fixes to the outer column 2 by welding etc., and is prepared in the outer column 2 bottom.

[0018] Inside the pair opposite side walls 8a and 8b of the couple of a bracket 4, the coma 11a and 11b of a couple is formed. The coma 11a and 11b of these couples has the slant faces 13a and 13b of a movable couple along the slant faces 9a and 9b of the couple of the guide member 10 while having the contact surfaces 12a and 12b of the couple which can contact the inner column 1 through the slots 3a and 3b of the outer column 2. The coma 11a and 11b of a couple carries out field contact at the pair opposite side walls 8a and 8b, respectively.

[0019] The locking bolt 14 is inserted in the coma 11a and 11b of the slots 7a and 7b for tilt adjustment on the couple, and a couple. The control lever 15 and the cam lock device 16 are established at the head of this locking bolt 14.

[0020] This cam lock device 16 consists of a control lever 15, a 1st cam member 17 rotated in one, and a 2nd cam member 18 of the nonrotation which moves to shaft orientations, and locks or cancels [ lock ], engaging with Yamabe of the 1st cam member 17, or a trough with the revolution of this 1st cam member 17.

[0021] In the tilt telescopic steering system constituted as mentioned above, if a control lever 15 is rocked to an one direction and a locking bolt 14 is bound tight to shaft orientations when deciding and binding a tilt location and a telescopic location tight, the coma 11a and 11b of a couple will move inside.

[0022] Under the present circumstances, the result which approaches so that the coma 11a and 11b of a couple may go up the slant faces 13a and 13b of that couple along the slant faces 9a and 9b of the couple of the abbreviation Yamagata-like guide member 10. The coma 11a and 11b of these couples moves up toward both the columns 1 and 2, approaching mutually. The inner column 1 is contacted through the slots 3a and 3b of the outer column 2 in the contact surfaces 12a and 12b of the couple, the inner column 1 is pressed up, the pressure welding of the inner column 1 is carried out to the outer column 2, and it is bound tight.

[0023] At this time, the coma 11a and 11b of a couple is in the condition that it is stubborn between the inner column 1 and the slant faces 9a and 9b of the guide member 10, and cannot approach mutually more than it, therefore carries out the pressure welding of the pair opposite side walls 8a and 8b of the couple of a bracket 4 to the outside side face of the coma 11a and 11b of a couple, respectively, and presses them on it. In this way, the inner column 1 and the outer column 2 are really held through the coma 11a and 11b of a couple at relation to a bracket 4.

[0024] On the other hand, at the time of tilt telescopic discharge, if a control lever 15 is rocked in the other directions and a locking bolt 14 is canceled, as the coma 11a and 11b of a couple goes down the slant faces 13a and 13b of the couple along the slant faces 9a and 9b of the couple of the abbreviation Yamagata-like guide member 10, they will estrange them mutually, and will cancel a prop between the inner column 1 and the slant faces 9a and 9b of the guide member 10. Consequently, while canceling the pressure welding to the inner column 1 by the contact surfaces 12a and 12b of a couple, the pressure welding of the outside side face of the coma 11a and 11b of a couple and the pair opposite side walls 8a and 8b of the couple of a tilt bracket 4 is canceled.

[0025] Therefore, the lock device 16 using Coma 11a and 11b and the slant faces 9a, 9b, 13a, and 13b of a couple can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to the gestalt of this operation, without using a right screw like before, and a left screw.

[0026] Next, the gestalt of the 2nd operation of this invention is explained with reference to drawing 3. The configuration of the guide member which prepares the gestalt of the 2nd operation in the outer column bottom differs from the gestalt of the 1st operation. In addition, a part for the structured division same about drawing 3 as the gestalt of the 1st operation shown in drawing 2 is explained with the same sign.

[0027] Drawing 3 is the cross-sectional view showing the lock device concerning the gestalt of the 2nd operation of tilt telescopic shown in drawing 1.

[0028] As shown in drawing 3, a bracket 4 fixes to a car body and is provided so that both the columns 1 and 2 may be enclosed from the upper part. the upper part of this bracket 4 -- the method of both sides -- flare appearance -- Shoulders 5a and 5b are attached by welding etc. the bottom, and Shoulders 5a and 5b are equipped with the capsules 6a and 6b for balking at the time of a secondary collision. The bracket 4 has the pair opposite side walls 8a and 8b of the couple in which the slots 7a and 7b for tilt adjustment on the couple were formed. The slots 7a and 7b for tilt adjustment curved so that a steering shaft could rotate a tilt location to adjustment, and they have extended almost up and down.

[0029] The guide member 20 is fixed to the outer column 2 bottom by welding etc. The guide member 20 has a part for a horizontal level 22 and the L type part 23 linked to a slant face 21 and a slant face 21 in one.

[0030] A coma 24 is formed in the slant-face 21 side inside the pair opposite side walls 8a and 8b of the couple of a bracket 4. A coma 24 contacts the slant face 21 of the guide member 20, and has the movable slant face 26 along with it while it has the contact surface 25 which can contact the inner column 1 through the slot 3 of the outer column 2. A coma 24 carries out field contact at pair opposite side wall 8a.

[0031] The locking bolt 14 is inserted in the slots 7a and 7b for tilt adjustment and coma 24 of a couple. The control lever 15 and the cam lock device 16 are established at the head of this locking bolt 14.

[0032] This cam lock device 16 consists of a control lever 15, a 1st cam member 17 rotated in one, and a 2nd cam member 18 of the nonrotation which moves to shaft orientations, and locks or cancels [ lock ], engaging with Yamabe of the 1st cam member 17, or a trough with the revolution of this 1st cam member 17.

[0033] In the tilt telescopic steering system constituted as mentioned above, if a control lever 15 is rocked to an one direction and a locking bolt 14 is bound tight to shaft orientations when deciding and binding a tilt location and a telescopic location tight, a coma 24 will move inside.

[0034] Under the present circumstances, as a result of a coma's 24 moving so that a slant face 26 may go up along the slant face 21 of the guide member 20, a coma 24 moves up toward both the columns 1 and 2, contacts the inner column 1 through the slot 3 of the outer column 2 in that contact surface 25, presses the inner column 1 up, carries out the pressure welding of the inner column 1 to the outer column 2, and binds it tight.

[0035] At this time, a coma 24 is in the condition that it was stubborn between the inner column 1 and the slant face 21 of the guide member 20, into the L type parts 23 of the outside side face of a coma 24, and the guide member 20, carries out the pressure welding of the pair opposite side walls 8a and 8b of the couple of a bracket 4, respectively, and presses them. In this way, the inner column 1 and the outer column 2 are really held through the L type parts 23 of a coma 24 and the guide member 20 at relation to a bracket 4.

[0036] On the other hand, if a control lever 15 is rocked in the other directions and a locking bolt 14 is canceled, at the time of tilt telescopic discharge, a coma 24 will move so that a slant face 26 may go down along the slant face 21 of the guide member 20, and will cancel a prop between the inner column 1 and the slant face 21 of the guide member 20 at it. Consequently, while canceling the pressure welding to the inner column 1 by the contact surface 25, the pressure welding of the outside side face of a coma 24 and the pair opposite side walls 8a and 8b of the couple of the tilt bracket 4 of the L type part 23 of the guide member 20 is canceled, respectively.

[0037] Therefore, the lock device 16 using a coma 24 and slant faces 21 and 26 can be applied to tilt telescopic, without inviting the jump of a manufacturing cost according to the gestalt of this operation, without using a right screw like before, and a left screw.

[0038] In addition, this invention is not limited to the gestalt of operation mentioned above, but is variously deformable.

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[Translation done.]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the side elevation of the tilt telescopic steering system for cars concerning the gestalt of operation of this invention.

[Drawing 2] It is the cross-sectional view of the lock device concerning the tilt and the telescopic 1st operation gestalt which were shown in drawing 1 .

[Drawing 3] It is the cross-sectional view of the lock device concerning the tilt and the telescopic 2nd operation gestalt which were shown in drawing 1 .

[Description of Notations]

- 1 Inner Column
- 2 Outer Column
- 3, 3a, 3b Slot
- 4 Bracket
- 5, 5a, 5b Shoulder
- 6, 6a, 6b Capsule for balking at the time of a secondary collision
- 7 Slot for Tilt Adjustment
- 8, 8a, 8b Pair opposite side wall
- 9a, 9b, 21 Slant face
- 10 20 Guide member
- 11, 11a, 11b, 24 Coma member
- 12a, 12b, 25 Contact surface
- 13a, 13b, 26 Slant face
- 14 Locking Bolt
- 15 Control Lever
- 16 Lock Device (- Discharge Means with Bundle)
- 17 1st Cam Member
- 18 2nd Cam Member
- 22 Guide Member Horizontal Level
- 23 Guide Member L Type Part

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[Translation done.]

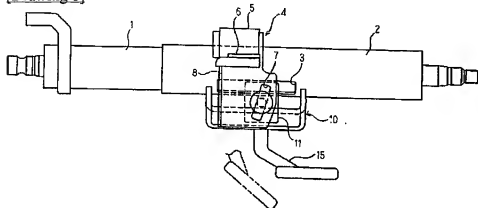
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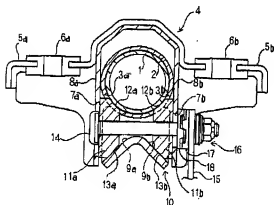
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## DRAWINGS

[Drawing 1]

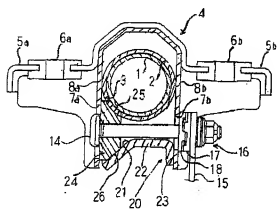


[Drawing 2]



[Drawing 3]





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[Translation done.]

PAT-NO: JP02002166835A  
DOCUMENT-IDENTIFIER: JP 2002166835 A  
TITLE: TILTING/TELESCOPIC STEERING DEVICE FOR VEHICLE  
PUBN-DATE: June 11, 2002

INVENTOR-INFORMATION:

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MATSUMOTO, SAKAE	N/A

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NSK LTD	N/A

APPL-NO: JP2000367263  
APPL-DATE: December 1, 2000

INT-CL (IPC): B62D001/18

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a tilting/telescopic steering device based on a lock mechanism using a pair of pieces and slopes without causing the manufacturing cost to steeply rise.

SOLUTION: The tilting/telescopic steering device is structured so that the pieces 11a and 11b move inward when a fastening bolt 14 is driven in the axial direction for fastening through an operating lever 15. The pieces 11a and 11b have slopes 13a and 13b approaching in such a way as crimbing along a pair of slopes 9a and 9b of a guide member 10 having approximately an angle shape, and as a result, move upward toward two columns 1 and 2, which causes a pair of contacting surfaces 12a and 12b to be put in pressure contact with the inner

column 1 to generate fastening. The pieces 11a and 11b thrust between the inner column 1 and the slopes 9a and 9b of the guide member 10 and can not approach any more to each other, and the mating side walls 8a and 8b of a bracket 4 are put in pressure contact with the outer side faces of the pieces 11a and 11b, respectively.

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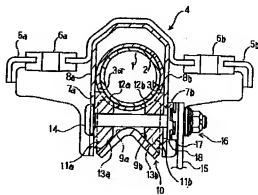
Fターム(参考) 30030 D018 D026 D065 D074 D076

(54) 【発明の名称】 車両用デルト・テレスコピック式ステアリング装置

(57) 【要約】

【課題】 製造コストの高騰を招来することなく、コマと斜面を利用したロック機構をデルト・テレスコピック式に適用すること。

【解決手段】 デルト・テレスコピック締付時には、操作レバー15を介して締付ボルト14を軸方向に締め付けると、一対のコマ11a、11bが内側に移動する。一対のコマ11a、11bは、その一対の斜面13a、13bを略山形状のガイド部材10の一対の斜面9a、9bに沿って上るように近接する結果、両コラム1、2に向かって上方に移動し、一対の接触面12a、12bをインナーコラム1に圧接し、締め付けする。一対のコマ11a、11bは、インナーコラム1とガイド部材10の斜面9a、9bとの間で突っ張ってそれ以上に相互に近接できない状態にあり、一対のコマ11a、11bの外側側面にブラケット4の一対の対向側壁8a、8bをそれぞれ圧接する。



## 【特許請求の範囲】

【請求項1】 運転者の運転姿勢に応じて、ステアリングコラムの傾斜角度や軸方向位置を調整する車両用チルト・テレスコピック式ステアリング装置において、インナーコラムに摺動自在に嵌合すると共に、テレスコピック位置調整用の溝部を形成したアウターコラムと、車体側に固定され、これら両コラムの嵌合部を囲うように配設し、一対のチルト調整用溝を形成した一対の対向側壁を有するブラケットと、アウターコラムに固定してブラケットの内側に配設し、

斜面を有するガイド部材と、

ブラケットの一対の対向側壁のうち少なくとも一方の内側に接触して配設し、アウターコラムの前記溝部を介してインナーコラムに接触可能な接触面、及びガイド部材の斜面に沿って移動可能な斜面を有するコマと、

一対のチルト調整用溝とコマを挿通して前記一対の対向側壁を締め付けて両側壁間の間隙を縮小したり、両側壁の締め付けを解除したりするための締付ボルトと、

操作レバーの振動に対応して、前記締付ボルトをその軸方向に締付・解除する締付・解除手段と、を具備することを特徴とする車両用チルト・テレスコピック式ステアリング装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、運転者の運転姿勢に応じて、ステアリングコラムの傾斜角度や軸方向位置を調整できる車両用チルト・テレスコピック式ステアリング装置に関する。

【0002】

【従来の技術】 例えば、実公許8-8939号公報に開示してあるテレスコピック式ステアリング装置では、アウターコラムに対してインナーコラムが摺動自在に嵌合してあり、一つの操作レバーの振動によりテレスコピック締付と解除を行うロック機構が両コラムの嵌合部に設けられてある。

【0003】 このロック機構では、操作レバーに、右雄ネジと左雄ネジを形成した締付ボルトが取付けであり、この締付ボルトには、左右対称の一対のコマが挿通してあり、これら一対のコマには、それぞれ、締付ボルトの右雄ネジと左雄ネジに嵌合する右雄ネジと左雄ネジが形成してある。これら一対のコマの上面は、アウターコラムに形成した切欠きを介してインナーコラムに接触可能になっており、一対のコマの下面は、略山形状のガイド部材の一対の斜面に沿って移動可能になっている。

【0004】 したがって、テレスコピック締付時には、操作レバーを一方に揺動して締付ボルトを回動すると、右ネジと左ネジの関係から、一対のコマが相互に近接する。この際、一対のコマは、その下面を略山形状のガイド部材の一対の斜面に沿って上るように近接する結果、これら一対のコマは、相互に近接しながら上方に移

動し、その上面をアウターコラムの切欠きを介してインナーコラムを上方に押圧して、インナーコラムをアウターコラムに圧接する。

【0005】 テレスコピック解除時には、操作レバーを他方向に揺動して締付ボルトを回動すると、右ネジと左ネジの関係から、一対のコマが相互に離間する。この際、一対のコマは、その下面を略山形状のガイド部材の一対の斜面に沿って下のようにして相互に離間する結果、一対のコマによるインナーコラムへの押圧を解除して、インナーコラムとアウターコラムの圧接を解除する。

【0006】

【発明が解決しようとする課題】 ところで、ステアリングコラムの軸方向位置と傾斜角度を調整するチルト・テレスコピック式においても、上記公報に開示してある一対のコマと斜面を利用したロック機構を適用したいといった要望があるが、上記公報の開示のみでは、一対のチルト用溝を形成したブラケットをどのように組み込めばよいかが明確でなく、チルト・テレスコピック式に、必ずしも容易に上記ロック機構を適用し得ないといったことがある。

【0007】 また、上記公報では、右ネジと左ネジの関係から、一対のコマが相互に近接・離間する構成になっているが、2種類のネジを締付ボルトと一対のコマとに形成する必要があり、加工工程が煩雑であり、製造コストの高騰を招来するといったことがある。

【0008】 本発明は、上述したような事情に鑑みてなされたものであって、製造コストの高騰を招来することなく、コマと斜面を利用したロック機構をチルト・テレスコピック式に適用した車両用ステアリング装置を提供することを目的とする。

【0009】

【課題を解決するための手段】 上記の目的を達成するため、本発明に係る車両用ステアリング装置は、運転者の運転姿勢に応じて、ステアリングコラムの傾斜角度や軸方向位置を調整する車両用チルト・テレスコピック式ステアリング装置において、インナーコラムに摺動自在に嵌合すると共に、テレスコピック位置調整用の溝部を形成したアウターコラムと、車体側に固定され、これら両コラムの嵌合部を囲うように配設し、一対のチルト調整用溝を形成した一対の対向側壁を有するブラケットと、アウターコラムに固定してブラケットの内側に配設し、斜面を有するガイド部材と、ブラケットの一対の対向側壁のうち少なくとも一方の内側に接触して配設し、アウターコラムの前記溝部を介してインナーコラムに接触可能な接触面、及びガイド部材の斜面に沿って移動可能な斜面を有するコマと、一対のチルト調整用溝とコマを挿通して前記一対の対向側壁を締め付けて両側壁間の間隙を縮小したり、両側壁の締め付けを解除したりするための締付ボルトと、操作レバーの振動に対応して、前記締

付ボルトをその軸方向に締付・解除する締付・解除手段と、を具備することを特徴とする。

【0010】このように、本発明によれば、チルト・テレスコピック締付時には、操作レバーを一方方向に揺動して締付ボルトを軸方向に締め付けると、コマが内側に移動する。この際、コマは、そのガイド部材の斜面に沿って上るよう近接する結果、コマは、両コラムに向かって上方に移動し、その接触面をアウターコラムの溝部を介してインナーコラムに圧接してインナーコラムを上方に押し、インナーコラムをアウターコラムに圧接する。この時、コマは、インナーコラムとアウターコラムに一体のガイド部材の斜面との間で突っ張ってそれ以上に相互に近接できない状態となり、コマの側面にブラケットの少なくとも一方の対向側壁を圧接して押圧する。こうして、ブラケットに対しコマを介してインナーコラムとアウターコラムとは一体関係にされる。

【0011】チルト・テレスコピック解除時には、操作レバーを他方向に揺動して締付ボルトを解除すると、コマは、その斜面をガイド部材の斜面に沿って下るようになり、インナーコラムとガイド部材の斜面との間で突っ張り解除する。その結果、接触面によるインナーコラムへの圧接を解除してテレスコピック解除すると共に、コマの側面とチルトブラケットの少なくとも一方の対向側壁との圧接を解除してチルト解除する。

【0012】したがって、本発明によれば、右ネジと左ネジを用いることなく、製造コストの高騰を招来することなく、コマと斜面を利用したロック機構をチルト・テレスコピック式に適用することができる。

【0013】

【発明の実施の形態】以下、本発明の実施の形態に係る車両用チルト・テレスコピック式ステアリング装置を図面を参照しつつ説明する。

【0014】図1は、本発明の実施の形態に係る車両用チルト・テレスコピック式ステアリング装置の側面図である。図2は、図1に示したチルト・テレスコピックの第1の実施の形態にかかるロック機構の横断面図である。図3は、図1に示したチルト・テレスコピックの第2の実施の形態にかかるロック機構の横断面図である。以下詳述する。

【0015】図1に示すように、車体に固定したローアーム側のインナーコラム1に対して、アッパー側のアウターコラム2が撓動自在に嵌合しており、これら両コラム1、2の嵌合部に、チルト・テレスコピックのロック機構が設けられている。なお、アウターコラム2の下方には、後述する一對のコマ11を挿通するための一對のステアリング軸方向に延在する溝部3が形成されている。

【0016】図2に示すように、両コラム1、2を上方から囲うように、ブラケット4が車体に固定して設けられている。このブラケット4の上部には、両側方に張り出した肩部5a、5bが溶接等により取付けされており、肩部5

a、5bには、二次衝突時の離脱用力アスブル6a、6bが装着してある。ブラケット4は、一對のチルト調整用溝7a、7bを形成した一對の対向側壁8a、8bを有している。チルト調整用溝7a、7bはステアリングシャフトがチルト位置を調整用に回転できるように湾曲してほぼ上下に延びている。

【0017】アウターコラム2の下側には、一對の斜面9a、9bを有する略山形状のガイド部材10が溶接等によりアウターコラム2に固定して設けられている。

【0018】ブラケット4の一對の対向側壁8a、8bの内側には、一對のコマ11a、11bが設けられている。これら一對のコマ11a、11bは、アウターコラム2の溝部3a、3bを介してインナーコラム1に接触可能な一對の接触面12a、12bを有していると共に、ガイド部材10の一對の斜面9a、9bに沿って移動可能な一對の斜面13a、13bを有している。一對のコマ11a、11bは、それぞれ対向側壁8a、8bに面接触するようになっている。

【0019】一對のチルト調整用溝7a、7bと一對のコマ11a、11bには、締付ボルト14が挿通してある。この締付ボルト14の先端には、操作レバー15とカム・ロック機構16が設けられている。

【0020】このカム・ロック機構16は、操作レバー15と一体的に回転する第1カム部材17と、この第1カム部材17の回転に伴って、第1カム部材17の山部または谷部に係合しながら軸方向に移動してロックまたはロック解除する非回転の第2カム部材18とから構成してある。

【0021】以上のように構成したチルト・テレスコピック式ステアリング装置において、チルト位置とテレスコピック位置とを決めて締め付ける時には、操作レバー15を一方方向に揺動して締付ボルト14を軸方向に締め付けると、一對のコマ11a、11bが内側に移動する。

【0022】この際、一對のコマ11a、11bは、その一對の斜面13a、13bを略山形状のガイド部材10の一對の斜面9a、9bに沿って上るよう近接する結果、これら一對のコマ11a、11bは、相互に近接しながら両コラム1、2に向かって上方に移動し、その一對の接触面12a、12bをアウターコラム2の溝部3a、3bを介してインナーコラム1に接触してインナーコラム1を上方に押し、インナーコラム1をアウターコラム2に圧接して締め付ける。

【0023】この時、一對のコマ11a、11bは、インナーコラム1をガイド部材10の斜面9a、9bとの間で突っ張ってそれ以上に相互に近接できない状態になり、従って一對のコマ11a、11bの外側側面にブラケット4の一對の対向側壁8a、8bをそれぞれ圧接して押圧する。こうして、ブラケット4に対し一對のコマ11a、11bを介してインナーコラム1とアウターコ

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ラム2とは一体関係に保持される。

【0024】一方、チルト・テレスコピック解除時には、操作レバー15を他方向に揺動して締付ボルト14を解除すると、一對のコマ11a、11bは、その一對の斜面13a、13bを略山形状のガイド部材10の一對の斜面9a、9bに沿って下るようにして相互に離間し、インナーコラム1とガイド部材10の斜面9a、9bとの間で突っ張り解除する。その結果、一對の接触面12a、12bによるインナーコラム1への圧接を解除すると共に、一對のコマ11a、11bの外側側面とチルトブラケット4の一對の対向側壁8a、8bとの圧接を解除する。

【0025】したがって、本実施の形態によれば、従来のような右ネジと左ネジを用いることなく、製造コストの高騰を招来することなく、一對のコマ11a、11bと斜面9a、9b、13a、13bを利用したロック機構16をチルト・テレスコピック式に適用することができる。

【0026】次に図3を参照して、本発明の第2実施の形態について説明する。第2実施の形態は、アウターコラムの下側に設けるガイド部材の構成が第1実施の形態と異なる。なお、図3について、図2に示す第1実施の形態と同じ構造部分については同じ符号をもって説明する。

【0027】図3は、図1に示したチルト・テレスコピックの第2の実施の形態に係るロック機構を示す横断面図である。

【0028】図3に示すように、両コラム1、2を上方から囲うように、ブラケット4が車体固定して設けられている。このブラケット4の上部には、両側方に張り出した肩部5a、5bが溶接等により取付けられており、肩部5a、5bには、二次衝突時の衝撃吸収カプセル6a、6bが装着してある。ブラケット4は、一對のチルト調整用溝7a、7bを形成した一對の対向側壁8a、8bを有している。チルト調整用溝7a、7bはステアリングシャフトがチルト位置を調整用に回転できるように湾曲しては上下に延びている。

【0029】アウターコラム2の下側には、ガイド部材20が溶接等で固定してある。ガイド部材20は、斜面21と斜面21に接続する水平部分22とL型部分23を一体に有している。

【0030】ブラケット4の一對の対向側壁8a、8bの内側の斜面21側には、コマ24が設けてある。コマ24は、アウターコラム2の溝部3を介してインナーコラム1に接触可能な接触面25を有していると共に、ガイド部材20の斜面21に接触しあつて沿って移動可能な斜面26を有している。コマ24は、対向側壁8aに面接触するようになっている。

【0031】一對のチルト調整用溝7a、7bとコマ24には、締付ボルト14が挿通してある。この締付ボルト

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14の先端には、操作レバー15とカム・ロック機構16が設けてある。

【0032】このカム・ロック機構16は、操作レバー15と一体的に回転する第1カム部材17と、この第1カム部材17の回転に伴って、第1カム部材17の山部または各部に係合しながら軸方向に移動してロックまたはロック解除する非回転の第2カム部材18とから構成してある。

【0033】以上のように構成したチルト・テレスコピック式ステアリング装置において、チルト位置とテレスコピック位置とを決めて締め付ける時には、操作レバー15を一方方向に揺動して締付ボルト14を軸方向に締め付けると、コマ24が内側に移動する。

【0034】この際、コマ24は、斜面26がガイド部材20の斜面21に沿って上のように移動する結果、コマ24は、両コラム1、2に向かって上方に移動し、その接触面25をアウターコラム2の溝部3を介してインナーコラム1に接触してインナーコラム1を上方に押圧し、インナーコラム1をアウターコラム2に圧接して締め付ける。

【0035】この時、コマ24は、インナーコラム1とガイド部材20の斜面21との間で突っ張った状態にあり、コマ24の外側側面とガイド部材20のL型部分23にブラケット4の一對の対向側壁8a、8bをそれぞれ圧接して押圧する。こうして、ブラケット4に対しコマ24とガイド部材20のL型部分23を介してインナーコラム1とアウターコラム2とは一体関係に保持される。

【0036】一方、チルト・テレスコピック解除時には、操作レバー15を他方向に揺動して締付ボルト14を解除すると、コマ24は、斜面26がガイド部材20の斜面21に沿って下のように移動し、インナーコラム1とガイド部材20の斜面21との間で突っ張り解除する。その結果、接触面25によるインナーコラム1への圧接を解除すると共に、コマ24の外側側面とガイド部材20のL型部分23のチルトブラケット4の一對の対向側壁8a、8bとの圧接をそれぞれ解除する。

【0037】したがって、本実施の形態によれば、従来のような右ネジと左ネジを用いることなく、製造コストの高騰を招来することなく、コマ24と斜面21、26を利用したロック機構16をチルト・テレスコピック式に適用することができる。

【0038】なお、本発明は、上述した実施の形態に限定されず、種々変形可能である。

【0039】

【発明の効果】以上説明したように、本発明によれば、チルト・テレスコピック締付時には、操作レバーを一方方向に揺動して締付ボルトを軸方向に締め付けると、コマがガイド部材の斜面を両コラムの溝部を介してイン

ーコラムに圧接してインナーコラムを上方に押押し、インナーコラムをアウターコラムに圧接する。この時、コマはインナーコラムとガイド部材の斜面との間で突っ張ってそれ以上に近接できない状態にあり、ブラケットに対しコマを介してインナーコラムとアウターコラムとは一体に保持される。

【0040】チルト・テレスコピック解除時には、操作レバーを他方向に揺動して締付ボルトを解除すると、コマは斜面をガイド部材斜面に沿って下るように移動してインナーコラムとガイド部材の斜面との間で突っ張りを解除する。その結果、接触面によるインナーコラムへの圧接を解除すると共に、コマとブラケットとの圧接を解除する。

【0041】したがって、本発明によれば、右ネジと左ネジを用いることなく、製造コストの高騰を招来することなく、コマと斜面を利用したロック機構をチルト・テレスコピック式に適用することができる。

【図面の簡単な説明】

【図1】本発明の実施形態に係る車両用チルト・テレスコピック式ステアリング装置の側面図である。

【図2】図1に示したチルト・テレスコピックの第1実施形態に係るロック機構の横断面図である。

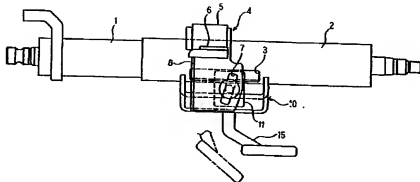
【図3】図1に示したチルト・テレスコピックの第2実

施形態に係るロック機構の横断面図である。

【符号の説明】

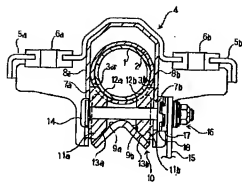
- 1 インナーコラム
- 2 アウターコラム
- 3、3a、3b 溝部
- 4 ブラケット
- 5、5a、5b 肩部
- 6、6a、6b 二次衝突時の離脱用カブセル
- 7 チルト調整用溝
- 8、8a、8b 対向側壁
- 9a、9b、21 斜面
- 10、20 ガイド部材
- 11、11a、11b、24 コマ部材
- 12a、12b、25 接触面
- 13a、13b、26 斜面
- 14 締付ボルト
- 15 操作レバー
- 16 ロック機構（締付・解除手段）
- 17 第1カム部材
- 18 第2カム部材
- 22 ガイド部材水平部
- 23 ガイド部材L型部分

【図1】





【図2】



【図3】

